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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,900	10/22/2001	Kailash C. Jain	DP-304772	6864

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EXAMINER	
OLSEN, KAJ K	

ART UNIT	PAPER NUMBER
1753	

DATE MAILED: 08/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/037,900	JAIN ET AL.
	Examiner	Art Unit
	Kaj K Olsen	1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-56* is/are pending in the application.

4a) Of the above claim(s) *54-56* is/are withdrawn from consideration.

5)☒ Claim(s) *52 and 53* is/are allowed.

6)☒ Claim(s) *1-26,32-39 and 50* is/are rejected.

7)☒ Claim(s) *27-31,40-49 and 51* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *10-22-01;6-03-30;1-28-04*
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-53, drawn to method of treating a gas sensor, classified in class 134, subclass 26.

II. Claims 54-56, drawn to a gas sensor, classified in class 204, subclass 424.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be treated by another method, such as by sintering. MPEP 2113 states that product claims are not bound by the process from which they were made. Moreover, USP 6,638,405 would seem to evidence that a number of the steps of the instant process are not required in order to arrive at a sensor having the set forth properties. See the double patenting rejection below. In particular, compare claims 11-17 of the instant invention with claims 11-17 of USP 6,638,405, which did not disclose any alkaline-carbonate treatment.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Pam Curbelo on 3-17-2004 a provisional election was made with traverse to prosecute the invention of group I, claims 1-53. Affirmation of this

election must be made by applicant in replying to this Office action. Claims 54-56 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Information Disclosure Statement

6. A couple of the references listed on the information disclosure statement (IDS) were not considered because it appears the patent numbers listed were incorrect. The subject matter of the listed patents had nothing to do with the instant invention and did not have inventors that matched the listed names. Because the examiner is no longer provided with the original copies of references cited by the applicant (because of the new image file wrapper (IFW) system), the examiner is unable to determine what the appropriate patent numbers were.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1, 2, 10-26 and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennard, III et al (USP 6,179,989) in view of either Ogasawara et al (USP 5,271,821).

10. Kennard '989 discloses a method for treating a gas sensor having both an electrolyte and first and second electrodes. Said method comprises disposing said gas sensor in a basic solution of KOH, which reads on the set forth basic agent. Kennard '989 also discloses that the gas sensor can also be disposed in hydrofluoric acid, which is an acidic agent. See col. 3, line 61 through col. 4, line 3. Although Kennard '989 mentions applying both of these solutions, it does not appear that Kennard '989 explicitly discloses applying both solutions to the same gas sensor (i.e. Kennard '989 appears to disclose only applying either KOH or HF to each gas sensor, but not both). However, one possessing ordinary skill in the art would apply both solutions in series because one would recognize that each of the acid and the base have different cleaning (i.e. etching) efficacies and that subsequent application of both cleaning solutions would provide the combined cleaning efficacy of both solutions. Kennard '989 does not explicitly disclose the wetting of the porous protective layer with an alkaline-carbonate solution. Ogasawara discloses exposing a porous protective layer to a solution of magnesium carbonate and magnesium

hydroxide in order to prevent silica from poisoning the gas sensor (col. 4, lines 12-25 and col. 5, lines 33-40). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Ogasawara for the method of Kennard '989 in order to construct a sensor impervious to Si poisoning. Ogasawara further discloses heating the sensor after said application (col. 6, lines 8-26).

11. With respect to the boiling of the acid solution, one possessing ordinary skill in the art would recognize that cleaning solutions are more effective the higher the temperature they are utilized at, and the use a boiling solution of acid would require only routine skill in the art.

12. With respect to the step of rinsing the gas sensor between the application of basic and acidic agent, common sense dictates that the base should be rinsed off prior to the application of the acid so as to not neutralize the effectiveness of the acid and to prevent any dangerous reaction between the strong acid and the remaining strong base.

13. With respect to the various properties of the gas sensor, these would appear to result from the claimed treatment, which is obvious over these references.

14. With respect to the concentration of the metal hydroxide-carbonate solution, finding the appropriate concentrations to arrive at the desired coating level of magnesia requires only routine skill in the art.

15. Claims 3-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennard '989 and Ogasawara in further view of Ishiguro et al (USP 4,857,165).

16. With respect to claim 3, the references set forth all the limitations of the claim, but did not explicitly recite the use of HCl as the acid material. Ishiguro also teaches the use of acid for the removal of silicon compounds from a sensor surface and particularly teaches the use of acids

such as HF (i.e. the acid taught by Kennard '989) and HCl (col. 4, lines 55-63). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Ishiguro for the method of Kennard '989 and Ogasawara because the substitution of one known silicon oxide removing agent for another requires only routine skill in the art.

17. With respect to claims 4-9, Kennard '989 does not explicitly disclose the use of aqueous solutions for the basic or acidic agents. Ishiguro also teaches that acidic and basic agents can also be provided in aqueous solution form (col. 4, lines 55-63). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize this teaching of Ishiguro for the method of Kennard '989 and Ogasawara because water is an inexpensive and readily available solvent for basic and acidic agents. With respect to the particular concentrations of acid solution of claim 7-9, see Ishiguro, claim 2.

18. Claims 35-39 and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennard '989 and Ogasawara in further view of Kennard, III et al (USP 5,492,612).

19. The references set forth all the limitations of the claims, but did not explicitly recite the application of a catalytic layer. Kennard '612 discloses in an alternate gas sensor that a catalytic layer comprising materials, such as platinum, palladium and rhodium, can be placed over the porous protective layer in order to prevent lean shifting of the gas sensor. See col. 1, lines 18-45 and col. 2, lines 43-67. It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Kennard '612 for the method of Kennard '989 and Ogasawara in order to construct a sensor that is not subject to lean shifting.

Double Patenting

20. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

21. Claims 1-26 and 32-34 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-18 and 20 of U.S. Patent No. 6,638,405 (hereafter referred to as "Jain") in view of Ogasawara.

22. Claim 1 of Jain sets forth a number of limitations drawn to the application of a combination of basic and acidic agents to a gas sensor that substantially overlaps the same subject matter of claim 1 of the instant invention. The instant invention differs principally in calling for the subsequent application of an alkaline-carbonate solution to the porous protective layer. However as discussed above, Ogasawara already set forth the use of such a solution for the prevention of silicon poisoning. It would have been obvious to one of ordinary skill in the art at the time the invention was being made for the invention of Jain to utilize the subsequent treatment disclosed by Ogasawara in order to construct a sensor that is impervious to silicon poisoning. Although Jain specifies the hydroxide form of basic agent in claim 1 (unlike claim 1 of the instant invention), a hydroxide is an obvious choice of basic agent (see claim 34 of the instant invention). Finally, although Jain explicitly specifies that the electrolyte is a solid

electrolyte, gas sensors in the art are conventionally based on solid electrolyte materials because they can withstand the high temperatures needed for gas sensing devices.

23. Claims 35-39 and 50 rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of Jain and Ogasawara in further view of Kennard '612.

24. These claims are rejected under obviousness-type double patenting for the same reasons these claims were rejected over the combination of Ogasawara and Kennard '612 as discussed above.

Allowable Subject Matter

25. Claims 52 and 53 are allowed.

26. Claims 27-31, 40-49 and 51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

27. The following is a statement of reasons for the indication of allowable subject matter: With respect to claims 27-31 and 51, the prior art does not disclose nor render obvious all the limitations of claims 1 or 50 and further comprising washing the gas sensor in an alkaline solution following the heating of the sensor. With respect to claims 40-49, 52 and 53, the prior art does not disclose nor render obvious all the limitations of claim 1 or the cumulative limitations of claim 50 with the step of treating the protective layer with a fluoride material subsequent to disposing the gas sensor in an acidic solution.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 5:30 A.M. to 3:00 P.M. and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AU 1753
August 24, 2004

KAJ K. OLSEN
PRIMARY EXAMINER